ELECTION/RESTRICTION

The Examiner has required restriction of the invention under 35 U.S.C. 121 and 35 U.S.C. 372 to one of the following groups:

Group I, claim(s) 1 (fully) and 7-15 (all in-part) drawn to a process for enhanced production of pantothenate comprising culturing a microorganism having (i) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, under conditions such that pantothenate production is enhanced.

Group II, claim(s) 2 (fully) and 7-15 (all in-part) drawn to a process for enhanced production of pantothenate comprising culturing a microorganism having (i) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, and (ii) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, under conditions such that pantothenate production is enhanced.

Group III claim(s) 16-27, drawn to a process for enhanced production of pantothenate comprising culturing a microorganism having (i) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway and (ii) a deregulated isoleucine-valine (ilv) biosynthetic pathway, and (iii) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, under conditions such that pantothenate production is enhanced.

Group IV, claims 34-35 (in-part), drawn to product produced by the process of group I.
Group V, claims 34-35 (in-part), drawn to product produced by the process of group SI.

Group VI, claims 34-35 (in-part), drawn to product produced by the process of Group III.

Group VII, claims 36 (fully) and 38-41 (all in-part) drawn to a recombinant microorganism for enhanced production of pantothenate comprising culturing a microorganism having (i) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, and (ii) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway.

Group VIII, claim(s) 37 (fully) and 38-41 (all in-part) drawn to a recombinant microorganism for enhanced production of pantothenate comprising culturing a microorganism having (i) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, (ii) a deregulated methylenetetrahydrofolate (MTF) bsosynthetic pathway, and (iii) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway.

Group IX, claims 42-43, A process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene;

(b) a deregulated *panD* gene; and

(c) at least one deregulated isoleucine-valsne (ilv) biosynthetic enzyme-encoding gene; under conditions such that at least 30 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Group X, claim 44, A process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene; and

(b) a deregulated *panD* gene; under conditions such that at least 50 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Group XI, claim 45, A process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene;

(b) a deregulated *panD* gene; and

(c) at least one deregulated MTF biosynthetic pathway; under conditions such that at least 50 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Group XII, claim 46, a process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene;

(b) a deregulated *panD* gene; and

(c) a deregulated glyA gene; under conditions of excess valine, such that at least 50 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Group XIII, claim 47, a process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene;

(b) a deregulated *panD* gene; and

(c) a mutated deleted or disrupted *panD* gene; under conditions of excess valine, such that at least 50 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Group XIV, claim 48, a process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene;

(b) a deregulated *panD* gene; and

(c) a deregulated *serA* gene; under conditions of excess valine, such that at least 50 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Group XV, claim 49, a process for producing pantothenate comprising culturing a recombinant microorganism having:

(a) a deregulated *panB* gene;

(b) a deregulated *panD* gene; and

(c) a deregulated *serA* gene; and (d) *glyA* gene, under conditions of excess valine, such that at least 50 g/1 pantothenate is produced after 36 hours of culturing the microorganism.

Applicants first respectfully note that in subparts (i) of Groups II, III, VII, and VIII set forth in the Office Action dated January 4, 2008, the Examiner references deregulation of the methylenetetrahydrofolate (MTF) biosynthetic pathway and likely means the pantothenate biosynthetic pathway.

Based on the above understanding, Applicants hereby elect the Group III invention (Claims 16-27, drawn to a process for enhanced production of pantothenate comprising culturing a microorganism having (i) a deregulated [pantothenate] biosynthetic pathway, (ii) a deregulated isoleucine-valine (ilv) biosynthetic pathway, and (iii) a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, under conditions such that pantothenate production is enhanced) for prosecution in the present application, ***with traverse***.

In the Restriction Requirement, the Examiner indicates that the special technical feature of Groups I-XV appears to be that they all relate to a process or recombinant organism for producing pantothenate by employing distinct genes or deregulating distinct pathways. As the product pantothenate is known in the art, the Examiner concludes that Groups I-XV share no special technical feature. Applicants respectfully submit that the Examiner has mischaracterized the special technical feature. While the Examiner's understanding of the claimed invention appears to be correct, he appears not to have recognized that the deregulation of specific pathways is claimed, and has provided no more than a mere conclusory statement as to "the art". In particular, Applicants submit that the unifying special technical feature is a process of enhancing production of pantothenate by deregulation of a particular pathway, namely, the methylenetetrahydrofolate (MTF) biosynthetic pathway. This special technical feature is present in at least all of groups I, II, III, VII, VIII, XI, XII, XIII, XIV, and XV. Accordingly, the foregoing groups form a single, unified invention.

Moveover, as provided by MPEP § 1850. III. A.,

> [t]he method for determining unity of invention under PCT Rule 13 shall be construed as permitting, in particular, the inclusion of any one of the following combinations of claims of different categories in the same international application:
>
> (A) In addition to an independent claim for a given product, an independent claim for a process specially adapted for the manufacture of the said product, and an independent claim for a use of the said product;
>
> (B) In addition to an independent claim for a given process, an independent claim for an apparatus or means specifically designed for carrying out the said process; or
>
> (C) In addition to an independent claim for a given product, an independent claim for a process specially adapted for the manufacture of the said product and an independent claim for an apparatus or means specifically designed for carrying out the said process.

In the instant application, Groups I-III and XI-XV are related to Groups VII and VIII as product and use of said product, *i.e.*, a recombinant microorganism having a deregulated MTF

biosynthetic pathway (Groups VII and VIII), and a process for enhanced production of pantothenate comprising culturing said microorganism (Groups I-III and XI-XV). Accordingly, Applicants submit that the restriction between at least Groups I-III, VII-VIII, and Groups XI-XV is improper, and respectfully request that the requirement for restriction among these groups be withdrawn. At a minimum, however, Applicants request that Groups III and VIII be examined together in the instant application, as these groups are related as product and use of said product. In particular, the claims of Group VIII are directed specifically to a recombinant microorganism for enhanced production of pantothenate, said microorganism having a deregulated pantothenate biosynthetic pathway, a deregulated methylenetetrahydrofolate (MTF) biosynthetic pathway, and a deregulated isoleucine-valine (ilv) biosynthetic pathway; while the claims of Group III are directed to a process for enhanced production of pantothenate, comprising culturing a microorganism having said features. Accordingly, Applicants request that the requirement for restriction among the foregoing groups be reconsidered and withdrawn.

A request for a five month Extension of Time is being filed concurrently herewith. Please charge our Deposit Account No. 12-0080 in the amount of $2,230.00 covering the extension of time fee. The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 12-0080, under Order No. BGI-154US.

Dated: July 7, 2008

Respectfully submitted,

/Debra J. Milasincic, Esq./

Electronic signature for
Debra J. Milasincic, Esq.
Registration No. 46,931
LAHIVE & COCKFIELD, LLP
One Post Office Square
Boston, Massachusetts 02109-2127
(617) 227-7400
(617) 742-4214 (Fax)
Attorney/Agent For Applicant